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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/533,473

04/29/2005

Carlos F. Fuente

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DILLON & YUDELL, LLP  
8911 N CAPITAL OF TEXAS HWY  
SUITE 2110  
AUSTIN, TX 78759

EXAMINER

LOONAN, ERIC T

ART UNIT

PAPER NUMBER

2189

MAIL DATE

DELIVERY MODE

05/29/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/533,473	FUENTE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	ERIC LOONAN	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 January 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 7,8,13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7,8,13 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

This Office Action is the response to applicant's remarks submitted 2 January 2008 based on application 10/533,473 originally filed 29 April 2005. **Claims 1-6, 9-12, and 15-18** have been cancelled by the applicant. **Claims 7-8 and 13-14** are currently pending and have been considered below.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 7-8 and 13-14** are rejected under 35 U.S.C. 102(b) as being anticipated by Ohran (US Patent 5,835,953).

3. **Claim 7:** Ohran teaches a method for performing lock management for a flash copy in a shared storage system, said method comprising: designating one node within said shared storage system an owner node for metadata relating to all input/output (I/O) relationships of a region of storage (Fig 1, 12 – Primary System); designating remaining nodes within said shared storage system client nodes (Fig 1, 14 – Backup System); in response to a host I/O request arriving at one of said client nodes (Fig 5, 94 where the backup system initiates the backup), suspending said I/O request by said one client node and inquiring said owner node if said region of storage associated with said I/O request has been copied (Fig 5, 100); placing a lock record by said owner node against an appropriate metadata for said region of storage associated with said I/O request if

said region of storage associated with said I/O request has not been copied (Fig 5, 102); if said I/O request is a Target Read (Fig 6, 112 – Backup Read Request), transferring data to a host by said one client node via a Flash Copy algorithm, and sending an UNL message to said owner node by said one client node at the completion of said data transfer; and removing said lock record by said owner node from its metadata table upon the receipt of said UNL message (Fig 6, 118 and 120).

4. **Claim 8:** The method of claim 7, wherein said method further includes: if said I/O request is a Target Write or Source Write (Fig 10, 214 or 216), performing a copy-on-write by said one client node, and sending an UNLC request to said owner node by said one client node at the completion of said copy-on-write (Fig 10, 224); and upon the receipt of said UNLC request, marking by said owner node in its metadata a region affected; removing said lock record; informing any waiting requests that said region has been copied and issuing an UNLD message to said one client node; upon the receipt of said UNLD message, releasing said suspended write operation by said one client node and completing said write operation to said host (Fig 10, 230).

5. **Claim 13:** Ohran teaches a computer storage medium having a computer program product for performing lock management for a flash copy in a shared storage system, said computer storage medium comprising: computer program code for designating one node within said shared storage system an owner node for metadata relating to all input/output (I/O) relationships of a region of storage (Fig 1, 12 – Primary System); computer program code for designating remaining nodes within said shared storage system client nodes (Fig 1, 14 – Backup System); computer program code for,

in response to a host I/O request arriving at one of said client nodes (Fig 5, 94 where the backup system initiates the backup); suspending said I/O request by said one client node and inquiring said owner node if said region of storage associated with said I/O request has been copied (Fig 5, 100); computer program code for placing a lock record by said owner node against an appropriate metadata for said region of storage associated with said I/O request if said region of storage associated with said I/O request has not been copied (Fig 5, 102); computer program code for, if said I/O request is a Target Read (Fig 6, 112 – Backup Read Request), transferring data to a host by said one client node via a Flash Copy algorithm, and sending an UNL message to said owner node by said one client node at the completion of said data transfer; and computer program code for removing said lock record by said owner node from its metadata table upon the receipt of said UNL message (Fig 6, 118 and 120).

6. **Claim 14:** The computer storage medium of claim 13, said method further comprising: computer program code for, if said I/O request is a Target Write or Source Write (Fig 10, 214 or 216), performing a copy-on-write by said one client node, and sending an UNLC request to said owner node by said one client node at the completion of said copy-on-write (Fig 10, 224); and upon the receipt of said UNLC request, computer program code for marking by said owner node in its metadata a region affected; computer program code for removing said lock record; computer program code for informing any waiting requests that said region has been copied and issuing an UNLD message to said one client node; upon the receipt of said UNLD message,

computer program code for releasing said suspended write operation by said one client node and completing said write operation to said host (Fig 10, 230).

### ***Response to Arguments***

7. Applicant's response filed 2 January based on Office Action mailed on 20 December 2007 has been fully considered below.

#### Claim Rejections under 35 U.S.C. 102(b)

8. With respect to applicant's argument that the prior art of record does not teach Claim 7's step of "designating remaining nodes within said shared storage system client nodes" on the basis of Figure 1's depiction of multiple primary systems, the examiner further directs the applicant to Column 8, Lines 3 -25 of Ohran where the primary system is further described as being "one or more" systems.

9. With respect to applicant's argument that the prior art of record does not teach Claim 7's step of "a host I/O request arriving at one of said client nodes", the examiner directs the applicant again to Column 8, Lines 3 -25 of Ohran where the primary system can be a "stand alone system". Thus, given the broadest reasonable interpretation of a "host", the examiner considers the primary system could include one such instance of a host.

10. With respect to applicant's argument that the prior art of record does not teach Claim 7's step of "in response to a host I/O request", the examiner directs the applicant to Column 20, Lines 50-65 of Ohran which notes that step 100 proceeds after initiation of the backup system.

11. With respect to applicant's argument that the prior art of record does not teach Claim 7's step of "suspending said I/O request", the examiner interprets, in the broadest reasonable interpretation of a "suspension", the process of identifying a logically consistent state for the purposes of establishing a snapshot as a suspension of the I/O request (Column 20, Lines 50-65).

12. With respect to applicant's argument that the prior art of record does not teach Claim 7's step of "placing a lock record by said owner node against an appropriate metadata for said region of storage associated with said I/O request if said region of storage associated with said I/O request has not been copied", the examiner respectfully disagrees with applicant's stance that taking a snapshot of the data is completely different from "placing a lock record" on the data. The examiner interprets, in the broadest reasonable interpretation of a "lock", that a snapshot acts as a lock and preserves the data from changes.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC LOONAN whose telephone number is (571)272-6994. The examiner can normally be reached on Monday-Friday, 7:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald Bragdon can be reached on (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2189

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Eric Loonan/  
Examiner, Art Unit 2189

/Reginald G. Bragdon/  
Supervisory Patent Examiner, Art Unit 2189